



# DOCUMENTATION CONTROL CENTER

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## DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION SPECIFICATION

### CONSTRUCTION AND INSTALLATION OF RUNWAY VISUAL RANGE SYSTEMS AT AIRPORTS DESIGNATED FOR CAT I AND CAT II OPERATIONS

#### 1. SCOPE AND CLASSIFICATION

1.1 Scope.- This specification covers the installation of Runway Visual Range equipment as a system at airports designated for Category I and/or Category II operations.

1.2 Classification.- Three classes of work are covered by this specification:

Class I - Structural and installation (turnkey)

Class II - Structural

Class III - Equipment installation

#### 2. APPLICABLE DOCUMENTS

2.1 Documents.- The following specifications and drawings, of the issues specified in the invitation for bids or request for proposals, form a part of this specification and are applicable to the extent specified herein.

2.1.1 FAA specifications.-

CAA-566

Concrete

FAA-1391

Installation and Splicing of Underground Cable

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FAA-C-95	Ground Rods (see FAA-C-1217) Construction of Driveway (if required)
FAA-E-2022	Substation, Power Distribution Transformer, Metalclad w/Supplement-1 and Amendment-2
FAA-E-2218	Interrupter, Electrical Sectionalizing, Metalclad
FAA-C-1217	Electrical Work, Interior

2.1.2 FAA standards.- FAA-STD-003 Paint Systems for Structures

2.1.3 FAA drawings.-

D-5855-1	Runway Visual Range System Cabling Diagram
D-5855-2	Runway Visual Range System Plct Layout
D-5855-3	Runway Visual Range System Projector and Receiver Layout
D-5855-4	Runway Visual Range System Wiring Diagram
D-5855-5	Runway Visual Range System Power Supply From ILS Glide Slope
D-5855-6	Runway Visual Range System, Transmissometer Support Stand
D-5855-7	Runway Visual Range System, Transmissometer Support Platform Layout and Ladder Details
D-5855-8	Runway Visual Range System, Transmissometer Support Cabinet Shelf, Top Shelf and Anchor Details
C-5855-9	Transmissometer Support (Bill of Materials -- Not required by this specification)
D-5855-10	Runway Visual Range System, Transmissometer Support Concrete Base

(Copies of this specification and other applicable FAA specifications, standards and drawings may be obtained from the Contracting Officer in the Federal Aviation Administration Office issuing the invitation for bids or request for proposals. Requests should fully identify material desired, i.e., specification, standard, amendment, and drawing numbers and dates. Requests should cite the invitation for bids, request for proposals, or the contract involved or other use to be made of the requested material.)

3. REQUIREMENTS

3.1 General.- The work to be accomplished by the contractor shall be either Class I (3.2), Class II (3.3), or Class III (3.4) as required by the contract or order and as specified herein. The Government Furnished Equipment will include the following: Projector and Receiver, Supporting Towers (including obstruction lights), RVR Signal Data Converter Assembly, Transmissometer Indicator Assembly, Analogue Recorder, RVR Receiver-Decoder, Remote Display Units, RVR Computer Selector, and Day-Night Switch. The contractor shall supply all material, other than government furnished equipment, labor, tools, water, power, light, heat, transportation, construction equipment and other facilities as required for the particular class of work specified in the contract and to comply with the applicable specifications, codes, and drawings standards. The material furnished by the contractor shall be new, of standard manufacture, of best commercial grade conforming with the requirement of the applicable specifications and drawings specified herein. The transmissometer support stands (towers) are Government Furnished Material essentially as depicted on Drawings D-5855-6, D-5855-7, and D-5855-8. These drawings are a part of this specification for estimating and planning purposes; however, where minor discrepancies exist between these drawings and the erection drawing furnished by the support fabricator, the fabricator's drawing shall govern for erection, bill of materials, and piece markings. Such drawings furnished by the support fabricator are also a part of this specification. The Contractor shall provide suitable storage space and be responsible for all materials and equipment required for installation including the Government furnished material. Indoor storage space shall be provided for equipment and materials which may be damaged if exposed to the elements. At the option of the Contractor, weatherproof equipment may be stored without shelter.

It shall be the Contractor's responsibility to check all materials furnished by the Government. Should the Contractor find damaged materials and/or insufficient quantities of items listed as being furnished by the Government, he shall immediately notify the Government Representative in writing, so that additional quantities and/or replacements may be obtained without delaying the completion of installation. After the Contractor has accepted the materials from the Government Representative, all materials lost or damaged will be charged to the Contractor.

The cost of repairing or replacing Government equipment damaged or lost during construction shall be chargeable to the Contractor. The period of the Contractor's liability shall begin when the equipment is released to him by the Government Representative and terminate when the entire project is accepted by the Government. Items which must be installed before damage can be detected, may be accepted without the Contractor's test to prove satisfactory operation, although he will be responsible for detecting any obvious breakage or damage.

3.2 Class I Structural and installation requirements.- Under a Class I work requirement the contractor shall construct a completely operable system, electrically and electronically interconnected, calibrated and tested as specified herein for both Class II and Class III work requirements.

3.3 Class II Structural requirements.- Under a Class II work requirement the contractor shall perform all site work, provide underground utilities,

construct tower foundation, erect supporting towers, install cable complete with manholes and markers, and locate all equipment. All cabling shall be placed or installed as specified, with sufficient length to facilitate connecting with equipment terminals by the equipment installation contractor.

3.3.1 Clearing and leveling.- The transmissometer sites and trenching paths shall be cleared, leveled and obstructions removed as indicated on the plans and as specified for the individual site. In cultivated areas, sod which is removed to facilitate construction at transmissometer sites and on trenching paths, shall be carefully placed and/or replaced by sod of quality equal to that removed. Sod to be furnished by the contractor shall have a good cover of living or growing grass. This shall be interpreted to include grass that is seasonally dormant during the cold or dry seasons and capable of renewing growth after the dormant period. All sod shall be obtained from areas where the soil is reasonably fertile and contains a high percentage of loamy topsoil. Sod shall be cut or stripped from living, thickly matted turf relatively free of weeds or other undesirable foreign plants, large stones, roots or other materials which might be detrimental to the development of the sod or to future maintenance. At least 70 percent of the plants in the cut sod shall be composed of the species stated in the special provisions, and any vegetation more than 6 inches in height shall be mowed to a height of 3 inches or less before sod is lifted. Sod, including the soil containing the roots and the plant growth showing above, shall be cut uniformly to a thickness not less than that stated in the special provisions. Watering will be required if sodding is authorized when the soil is excessively dry. Water shall be delivered through pipe and hose or in containers which will assure delivery of a full-measured quantity without waste. When water is required to be applied on the surface, it shall be uniformly distributed over the area designated to be watered by means of hose sprinklers, sprinkler trucks, or other equipment approved by the engineer and at the rate stated in the special provisions.

3.3.2 Staking out work.- The Government Representative will provide reference stakes for individual locations including the required elevation bench marks for the projector and receiver supports and the routing of cable trenches. The contractor shall perform any other surveys and replace any survey stakes installed by the Government Representative which have been displaced or removed during construction activities. The contractor shall furnish without additional cost to the government, such help as may be required by the Government Representative in staking out the installation.

3.3.3 Layout.- The location and elevation of equipment shall be as indicated on detailed plans for the site, and as surveyed and staked out by the Government Representative.

3.3.4 Excavation.- Excavation shall be made to the minimum depth indicated on the drawings, or to a point 12 inches below the local frost line. Safe soil bearing pressure shall not be less than 3,000#/Sq ft. In the event the sub-soil encountered is unsatisfactory, the condition shall be called to the attention of the Government Representative.

Excavation shall be dry at the time concrete is placed and shall be kept dry until concrete has taken its initial set unless otherwise shown on the drawings or specified in the proposal.

3.3.4.1 Excavation near existing underground utilities.- The contractor shall obtain approval from the Government Representative for opening trenches whenever underground utilities may be encountered. He shall be responsible for the correct location and protection of all underground utilities in the vicinity of the work. Damage to any underground utilities or other objects caused by the contractor's operations shall be immediately repaired at the contractor's expense and in a manner satisfactory to the Government Representative and the airport authorities.

The contractor shall guarantee that all open trenches, temporary structures, and equipment, which are considered hazardous by the Government Representative, are properly marked with flags during the day and with lights at night. Such marking or protection against injury or damage shall be to the satisfaction of the Government Representative and the airport authorities. Open trenches shall be held to a minimum and may not be left open overnight without specific authority of the Government Representative.

3.3.5 Foundations.- In accordance with the drawings, concrete foundations shall be placed and steel erected in such a manner that when the projector and receiver units are mounted on the specified foundations, the beam axis of the units shall be adjustable to the required positions specified in site drawings and/or special proposal conditions. Work shall be carefully performed using procedures that will not cause damage to components of the equipment. Concrete shall have a minimum strength of 3000 pounds per square inch in 28 days in accordance with CAA 566.

Unless otherwise specified on the drawings or directed by the Government Representative, all concrete foundations shall rest on undisturbed earth. If the excavation is inadvertently carried below the required depth, corrective action shall be taken as directed by the Government Representative at no additional cost to the government. Under normal conditions backfilling under proposed concrete with earth will not be permitted.

Where soil conditions and foundation design permit, concrete may be poured without forms up to a point one foot below the finished grade line. Where forms are not used the earth shall be accurately shaped and extreme care shall be taken to keep debris and deleterious matter out of the concrete pour.

The projector and receiver unit foundations shall be of concrete construction, as shown on drawing D-5855-10 or as revised by site drawings. The proposal or contract drawings will specify the foundations to use under the contract. Conduits shall be oriented as required by the directions of the cable runs and shall extend at least 18 inches beyond the outside edge of the foundation construction line.

3.3.5.1 Stability requirements.- The main requisite for acceptable transmissometer operation is stability, beginning at the foundation and continu-

ing throughout the entire system. Two types of concrete foundations have been designed, as shown on drawing D-5855-10, to provide the required stability; the contract choice has been determined by the soil and climatic conditions. The proposal or contract drawings will specify the foundations under contract.

3.3.5.2 Reinforcing steel.- Reinforcing steel, if required by site conditions, shall be accurately located and firmly held in place so that no displacement will occur during pouring operations. All reinforcing shall be of intermediate grade new billet steel, ASTM A15, having a minimum yield point of 40,000 psi. Deformations shall conform to ASTM A305. Strength grade shall be identified on each bar in accordance with ASTM A15. All bars shall be bent cold, by approved machine methods, and shall be in accordance with standard approved practice. Fabrication of the reinforcement steel shall be in accordance with ACI-315 (Manual of Standard Practice for Detailing Reinforced Concrete Structures).

3.3.5.3 Grouting.- The foundations should be so constructed that grouting and shimming is not necessary, however, should grout be necessary the top footing surface shall be left rough to facilitate bond between the grout and the footing concrete. Where grout is not indicated, the top of the footing shall be given a smooth trowel finish with the surface parallel to the bottom of the structure to provide maximum bearing. All exposed edges of concrete shall be chamfered 3/4" unless other bevels are shown on the drawings. If the surface is not true and adequate contact of steel and concrete is not obtained, the contractor shall take corrective action as directed by the Government Representative at no extra cost to the government.

Grout, where used, shall be composed of a mixture of 1 portion of cement to 2 portions of sand. At the option of the contractor or where shrink-proof grout is stipulated by the Government Representative the grout shall be proportioned as recommended by the manufacturer of the necessary admixture. Grout shall be carefully leveled to provide a neat appearance.

3.3.6 Supports.- Identical support are provided for both the projector and the receiver, as shown on drawing D-5855-6. Briefly, the supports are low towers fabricated of metal (angles, pipes) and a metal platform. Top shelf height is usually 14 feet. Supports shall be assembled in accordance with the erection drawings and instructions provided by the manufacturer with each tower.

3.3.7 Height of transmissometer sensor elements.- The touchdown transmissometer units shall be placed (a) so that the line of sight between the projector and receiver is 14'  $\pm$  4" above the elevation of the touchdown point, (b) at least 10 feet above the ground at all points along the light path. Identical requirements apply to the roll-out transmissometer units. Elevations shall be as shown on applicable site drawing.

3.3.8 Alignment of transmissometer sensor elements.- The line of sight between the projector and receiver shall be unobstructed and level within 0.1 degree of horizontal.

3.3.9 Tolerances.-

- a. Touchdown transmissometer - when a 500' baseline is used the distance between the front mounting screws of the projector and the front mounting screws of the receiver shall be 500'  $\pm$  6"; when a 250' baseline is used the same distance shall be 250'  $\pm$  6".
- b. Roll-out transmissometer - the distance between the front mounting screws of the projector and the front mounting screws of the receiver shall be 250'  $\pm$  6".
- c. Tolerances for movement of the top of the receiver are 0.01" and 1 minute rotation.
- d. Tolerances for the top of the projector are 0.1" displacement and 5 minutes rotation.

3.3.10 Power, distribution and control.- A total of approximately 3.0 KVA, 60 hertz AC power is required for the system with all equipment on. The power supply for the RVR components shall be taken from the sources shown on drawing D-5855-1. Electrical installation shall be made in accordance with FAA Specification FAA-C-1217.

Power input requirements for individual units are as indicated below:

- (1) Projector and obstruction light; 875 watts total for projector stand.
- (2) Receiver with 50 watt lens heater, 500 watt hood heater, 100 watt pulse generator heater, and obstruction light; 1125 watt total for receiver stand.
- (3) Indicator and recorder; 450 watts total
- (4) RVR components near or in equipment room
  - (a) Receiver - decoder; 85 watts (where required near displays) total
  - (b) Signal data converter; 130 watts total
  - (c) Selector switch, where required; 50 watts total

3.3.11 Obstruction lighting.- The obstruction lighting equipment supplied with each tower shall be installed in accordance with drawing D-5855-4. All fittings, electrical wire, wraplock tape, junction boxes, conduit, hardware and materials necessary for installation shall be furnished. The conduit supporting the obstruction lights shall be firmly clamped to the structures so that the unit will not loosen due to wind or vibration. The circuit wiring shall be as specified in the proposal and as shown on drawing D-5855-4. The photo-electric on-off control shall have a fail-safe provision so that the lights will remain on in the event of equipment failure.

3.3.12 Telephone communications.- Telephone circuits shall be installed, with jacks to permit communications between the locations of the transmissometer projector, receiver, analogue recorder, and FAA equipment room as called for in the drawings and invitation for bid.

3.3.13 Equipment alignment.- Install all large flat metal surfaces, such as junction boxes, so that minimum surface area faces the glide slope antenna. This will minimize a re-radiation. When power is obtained from the Glide Slope Building, a 120-VAC weatherproof power outlet receptacle shall be provided at the junction box of the farthest unit, projector or receiver, from the glide slope antenna. This is primarily for the use of FAA electronic technicians to power a small receiver used for checking glide slope signals.

3.3.14 Cable.- Two conductor AWG #8 600 volt direct burial cable shall be normally used for power cable; however, cable of sufficient size to supply a minimum of 96% of rated voltage at the site, with all equipment on, including heaters, shall be used. A minimum of six conductors between the field site and the equipment room are required for signal and control. AWG #19 or larger telephone type cable is adequate for this purpose. Six pairs of conductors are required between field units for signal and meter circuits.

3.3.14.1 Underground and within structures.- All cable installed in trenches shall be of direct earth burial armored type and shall be installed as specified in the invitation for bid and in accordance with Specification FAA-1391. Normally, main cable runs between units shall be direct burial type cable in trenches. Cables under roadways, railroads, and under paved areas such as in over-run areas at joint-use airfields, shall be installed in accordance with FAA-1391. All risers within structures shall be rigid conduit.

3.3.14.2 Cable separation.- Runway Visual Range equipment wiring, shall be installed underground in separate trenches from supply and control cables of all other systems, unless otherwise specified.

Power/control cables shall have minimum separation as set forth in Specification FAA-1391.

3.3.15 Conduit and conduit fittings.- All exposed conduits shall be adequately plugged or capped during construction to prevent entrance of foreign matter. Unused conduits, if any, shall be capped. Conduit entrances into structures shall be made so that no openings remain that may permit entrance of insects or rodents. Grounding bushings shall be installed on all risers except as noted on installation drawings and connected to ground with No. 6 bare, solid, copper wire. Sherardized conduit or conduit having equal protection may be substituted for zinc-coated conduit, when authorized by the Government Representative. The bends and offsets made in the field in rigid conduit shall be made with an approved hickey or conduit bending machine. Conduit shall be installed as a complete system for each unit, before conductors are pulled in. They shall be fastened securely in place, and attached to steel work with galvanized clamps, straps, wraplock or other fasteners designed for the purpose, and to woodwork with pipe straps, or equal, securely fastened with galvanized nails. Conduit terminating in cabinets or boxes shall be fastened with double locknuts, washers, and bushings, except when otherwise specified.



Where equipment for outdoor use is furnished without water tight conduit hubs, such hubs shall be installed on all top and side conduit entrances. Weatherproof hubs shall be assembled with a gasket and gasket cement flat against the equipment and securely tightened to prevent the entrance of water.

Minor changes in the manufacturer's design of various equipment, such as the projector and receiver, or the awarding of procurement contracts to different manufacturers may change the exact location of conduit entrances from that shown on installation drawings. In such cases manufacturers installation drawings shall serve as the criteria and the contractor shall determine from the Government Representative the detailed requirement for equipment involved.

3.3.16 Handholes.- Handholes of heavy duty type with 110 psi minimum cover, or as required by site conditions, shall be installed by the contractor for the underground circuits in the locations shown on the drawings, as detailed in the drawings, and in the overrun areas, when so indicated in the proposal or drawings.

3.3.17 Cable markers.- Location of cable runs shall be marked by concrete slab markers in accordance with FAA 1391.

3.3.18 Painting.- All exposed metal structural surfaces of the supports for transmissometer shall be obstruction painted in accordance with Standard FAA-STD-003. Equipment, such as the projector and receiver, which have been factory painted, shall not be repainted, unless marred during installation or shipment and shall not be obstruction painted along with the supports.

3.4 Class III equipment installation requirements.- Under Class III work requirements the contractor shall connect, interconnect, adjust, calibrate and systems test all equipment as set forth in the manufacturer's equipment manuals and as specified herein. All metal cases of electrical equipment shall be grounded in accordance with FAA-C-1217. Ground rods shall be in accordance with FAA Specification FAA-C-1217 and shall be installed at locations detailed in the site plans. For low voltage insulation of conductor joints, 600 volts and below, approved connectors or a minimum of two wraps of Scotch Tape No. 22 wound half-lapped shall be used. Sharp edges and protruding points shall be filed down before tape is applied. The tape shall not be stretched more than necessary to effect good conformance and shall be applied in a workmanlike manner.

3.4.1 Projector and receiver.- The projector and receiver shall be located along the airport runway, as shown on site drawings.

3.4.2 RVR signal data converter assembly.- For Class I work, the RVR signal data converter assembly, consisting of a time base generator converter and storage register, and power supply shall be installed in the FAA equipment room in equipment racks designated for this purpose as indicated on the drawings. Where two or more RVR systems are installed, a separate signal data converter assembly shall be installed for each system.

3.4.3 Transmissometer indicator assembly.- For Class I work, the indicator assembly, with its associated constant voltage transformer, shall be located in the FAA equipment room, in equipment racks designated for its installation as indicated on the drawings.

3.4.4 Analogue recorder.- As part of Class I work, the analogue recorder shall be located in the Weather Bureau Office and/or in the FAA quarters as specified. The invitation for bid will state the location.

3.4.5 RVR Receiver - decoder.- This unit is required only when the cable run from the signal data converter to the remote display unit is in the range of 300 feet to 25 miles. The RVR receiver-decoder, when utilized, shall be installed in a position which is less than 300 feet from the display unit as indicated on the drawings as part of Class I work.

3.4.6 Remote display units.- One or more remote display units, up to a maximum of five units per receiver-decoder, shall be installed as indicated on the drawings as part of Class I work.

3.4.7 RVR computer selector.- This unit shall be installed in the FAA equipment room, in the designated rack, or other FAA facilities, and in the Weather Bureau Office, when required by the proposal or drawings. The computer selector shall be wired to have the capability of selecting the RVR system computer output that is desired, when multiple RVR systems are installed at the airport, when required by contract.

3.4.8 Day-night switch.- A photo-electric switch, is required with the RVR system. The switch shall be mounted facing north, whenever possible, and shall be mounted near the controlling office, on the roof, in a window, on a pole, or at some other satisfactorily exposed site as shown on the drawings. Three AWG #14 wires shall be furnished between the switch and the control panel as part of either Class of work. Areas of bright lights shall be avoided since lights will tend to prevent the switch from changing to night conditions.

3.4.9 HIRL/RVR interface.- As a part of either class work, an interface connection shall be contractor furnished and provided between the High Intensity Runway Lighting (HIRL) system and the Runway Visual Range (RVR) system. The primary of the connection shall connect in series with the output of the L-828 HIRL Regulator, as shown on drawing D-5855-1, and the secondary of the connection shall connect to the RVR Runway Light Intensity Relay Chassis if the contract is for Class I work.

The interface connection acceptable for tapping into the circuit of a HIRL Regulator is as follows or equal:

(1) 6.6 Ampere HIRL regulator output (either a. or b.)

- a. Westinghouse Electric Corporation Series-to-Multiple Transformer, Catalog No. 888949. (This device will require the connection of an external resistor, as specified in the manufacturers' instructions.)

- b. General Electric Company HIRL Brightness Sensing Device, Catalog No. C 405 G 005.
- (2) 20.0 Ampere HIRL regulator output (either a. or b.)
  - a. General Electric Company HIRL Brightness Sensing Device, Catalog No. C 405 G 006.
  - b. A device similar to Westinghouse Series-to-Multiple Transformer, Catalog No. 888949, modified to give a 20.0 ampere output.
- (3) In-line connectors. - Connectors shall be provided as required for connection into series lighting circuit.

3.5 Workmanship. - Workmanship shall be of the highest quality and shall be equal to the standards of performance required for similar work by the local building practices.

3.6 Cleaning up. - After completion of the work, the contractor shall remove from the site all surplus material belonging to him, his tools, and equipment, and shall clean up the rubbish and debris resulting from the work. He shall fill all excavations, distribute all excavated material and repair or restore any item damaged as a result of the work, for instance, damages, interior or exterior on buildings, roads, runways, taxiways aprons, grass, and shall leave the premises neat and workmanlike in appearance satisfactory to the Government Representative and the airport authorities.

3.7 Liability and safety precautions. - The contractor shall be responsible for his employee's strict observance of all airport rules and regulations. It shall be the contractor's responsibility to secure, through the Government Representative, the determination of the work area and the authorization to commence work. He shall see that his workmen are confined to the designated work areas, in order that safety in operation of the airport be maintained at all times.

The contractor shall obtain all necessary licenses, and authority and be responsible for strict adherence to all local codes covering the work detailed in the contract.

#### 4. QUALITY ASSURANCE PROVISIONS. -

4.1 Inspection. - All work performed under this contract will be subject to rigid inspection. Work that does not conform with the specifications, although accepted through oversight or other reasons may be rejected at any stage of performance.

4.2 Operation test. - A complete check shall be made of all wiring to make sure that all connections are tight, correct, and in full accord with installation instructions. All conductors in cable shall be checked for continuity and insulation resistance by test. All equipment required for the test shall be furnished by the contractor. All fuses shall be checked

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to determine that they are of the proper sizes in conformance with fuse capacities shown on the applicable wiring diagrams. After the power connections have been made, the contractor shall demonstrate by operational tests that the entire system will operate satisfactorily and will meet all requirements specified herein and in the equipment manufacturers equipment manuals.

5. PREPARATION FOR DELIVERY.-

5.1 None.-

6. NOTES.-

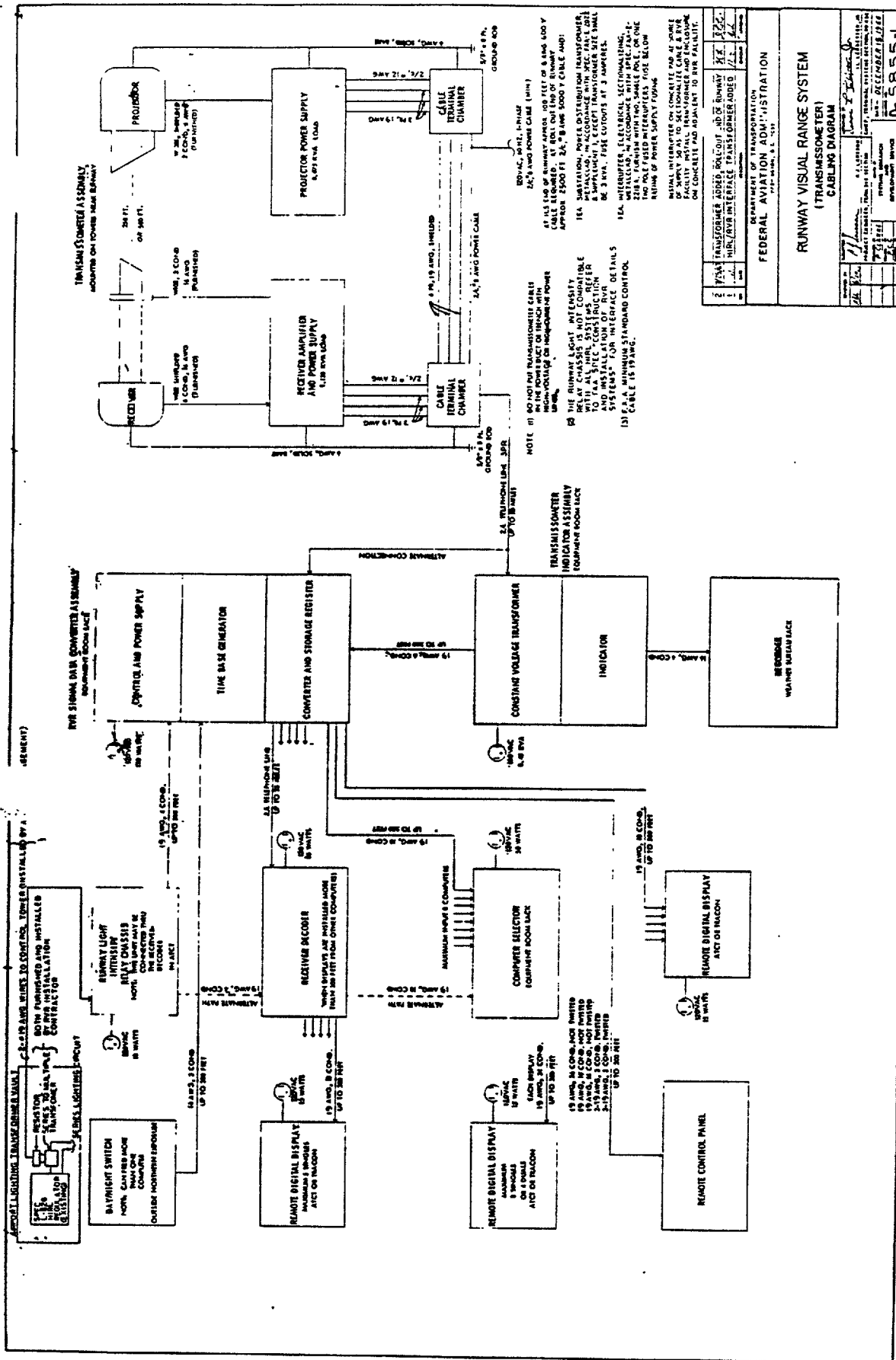
"6.1 Note on information items.- The contents of the subparagraphs below are only for the information of the Contracting Officer. They are not contract requirements, nor binding on either the Government or the contractor, except to the extent that they may be specified elsewhere in the contract as such. Any reliance placed by the contractor on the information in these subparagraphs is wholly at the contractor's own risk."

6.2 Ordering data.- The Contracting Officer should indicate in the invitation for bids, contract, or order the specific work - requirement desired by Class I, II or III (1.2).

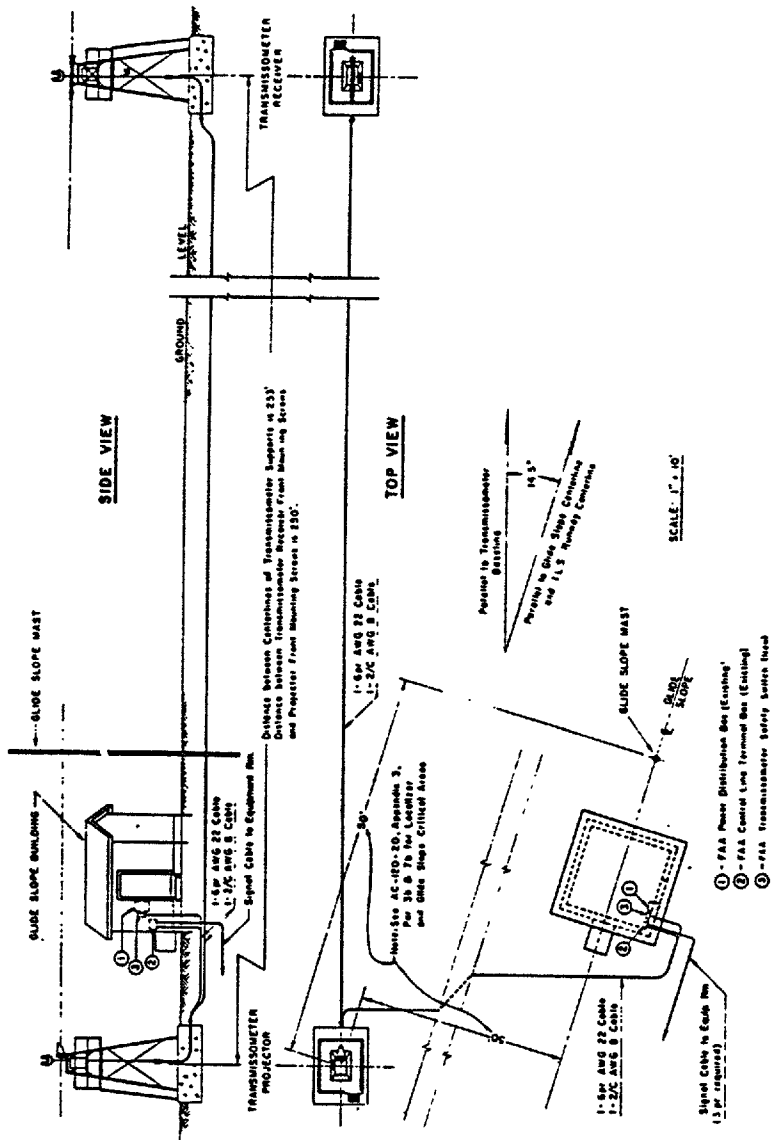
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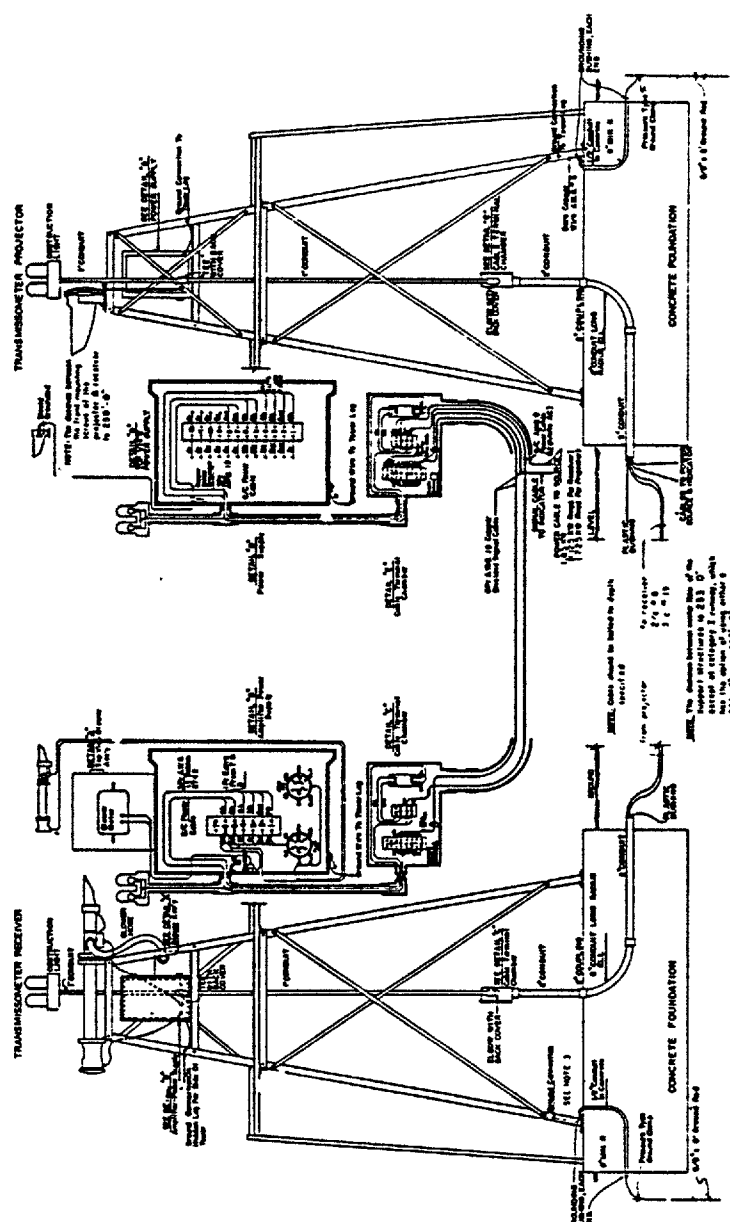
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D-5855-2, September 10, 1968  
D-5855-3, September 10, 1968  
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D-5855-5, September 10, 1968  
D-5855-6, December 11, 1967  
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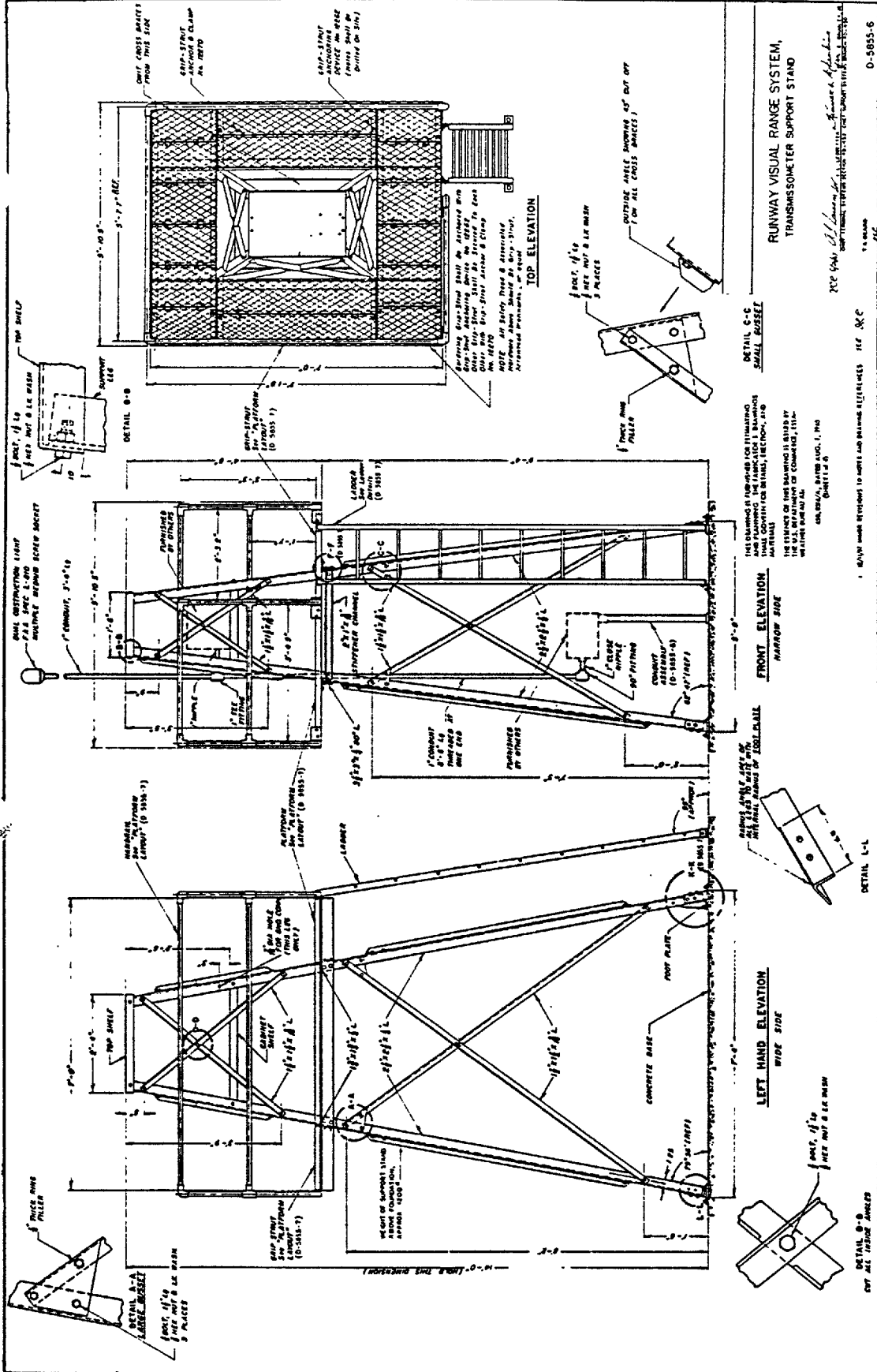
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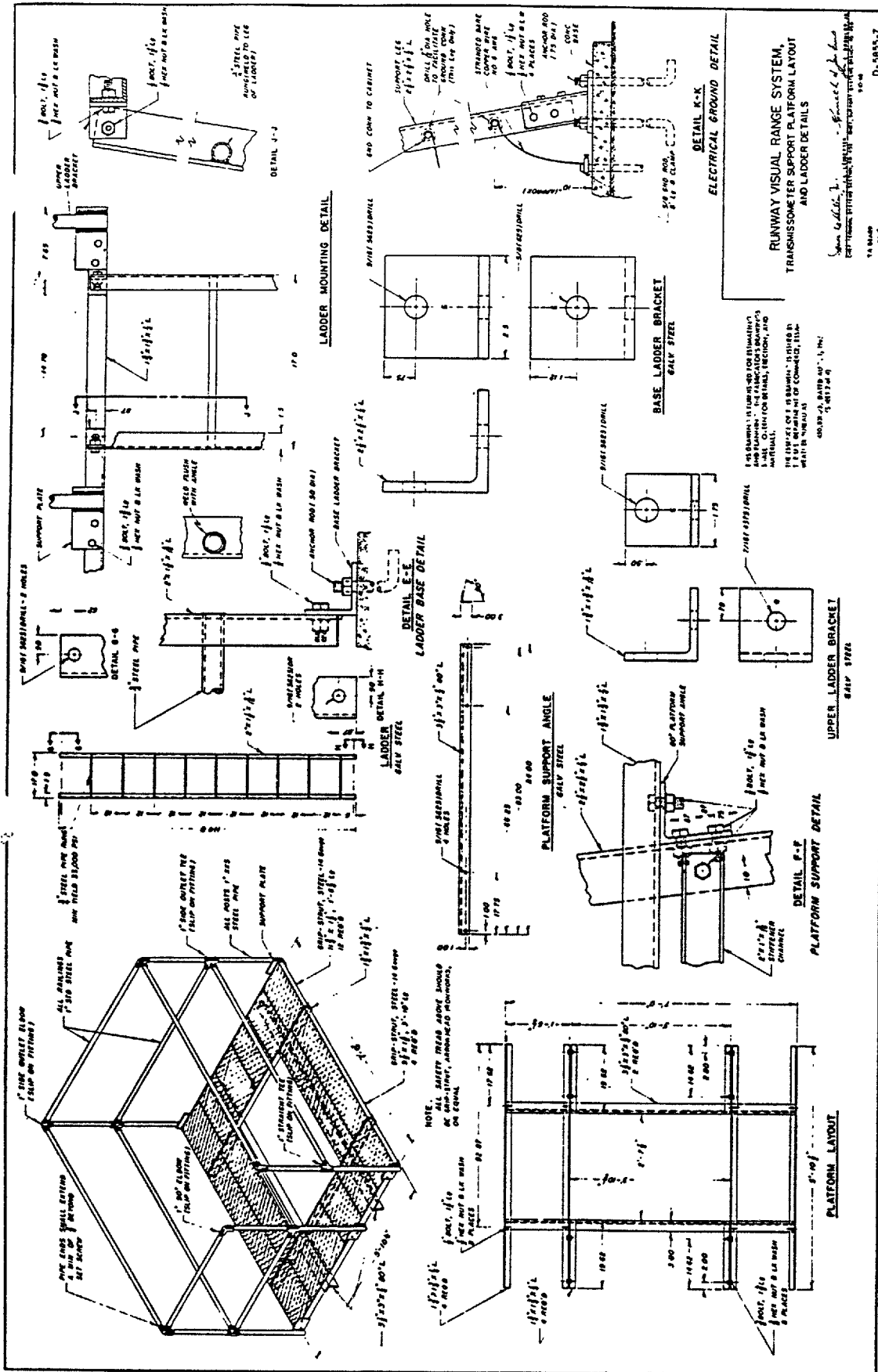


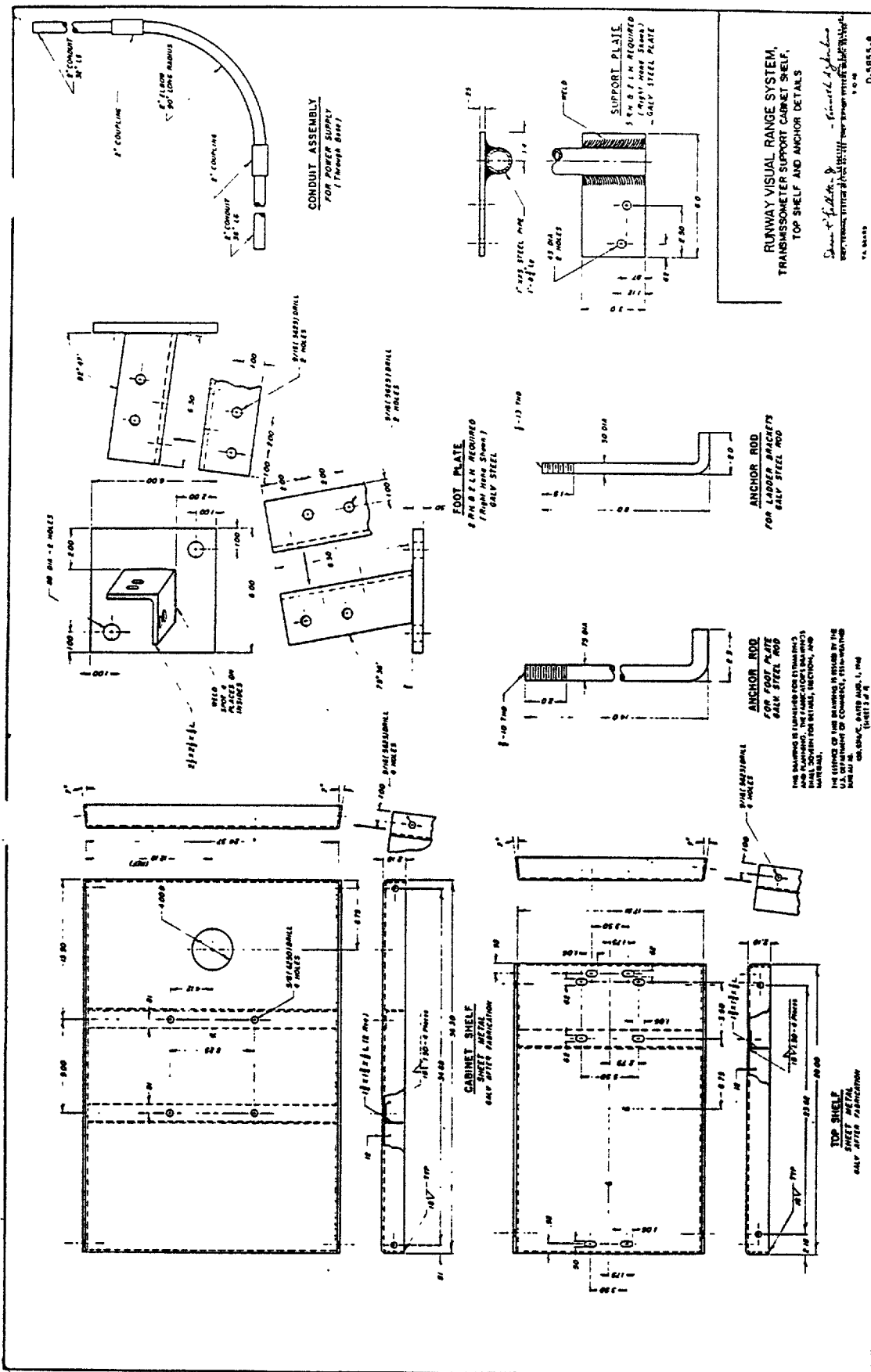
DEPARTMENT OF TRANSPORTATION FEDERAL AERONAUTICS ADMINISTRATION WASHINGTON, D. C. 20591	
RUNWAY VISUAL RANGE SYSTEM (TRANSMITTER)	
WIRING DIAGRAM	
FIG. NO.	1
DATE	10-1-55
BY	J. E. HANCOCK
CHECKED BY	J. E. HANCOCK
APPROVED BY	J. E. HANCOCK
REVISIONS	
NO.	DESCRIPTION
1	ORIGINAL
2	REVISION
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4	REVISION
5	REVISION
6	REVISION
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96	REVISION
97	REVISION
98	REVISION
99	REVISION
100	REVISION

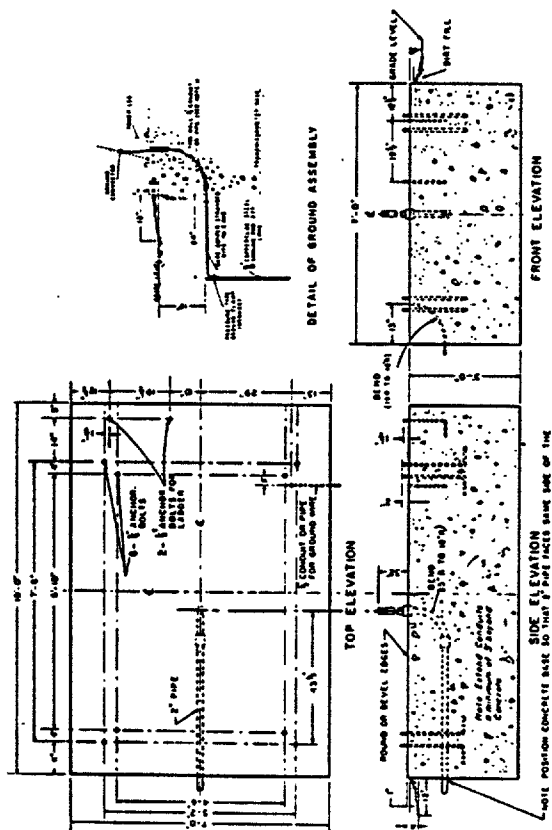


[illegible]









NOTE POSITION CONCRETE BLK SO THAT 8" PIPE FACES SAME SIDE OF THE SIDE ELEVATION

**PREPARED**

- a. The use of a 100% confidence interval is correct because the sample size is large and the confidence interval is narrow.
- b. The use of a 95% confidence interval is correct because the sample size is large and the confidence interval is narrow.
- c. The use of a 90% confidence interval is correct because the sample size is large and the confidence interval is narrow.
- d. The use of a 99% confidence interval is correct because the sample size is large and the confidence interval is narrow.
- e. The use of a 99.9% confidence interval is correct because the sample size is large and the confidence interval is narrow.

0111

1. **Plant activity in sandy localities** occurs in the form of small, dense, low-growing vegetation. In the case of the *Phragmites* and *Scirpus* species, a characteristic feature is the presence of a dense, low-growing vegetation in the form of small, dense, low-growing vegetation. In the case of the *Phragmites* and *Scirpus* species, a characteristic feature is the presence of a dense, low-growing vegetation in the form of small, dense, low-growing vegetation.

**ALTERNATE**

- [illegible]

2599 2003 4388 14850 83000 0 40000 0 31000 (10M/71)

RUNWAY VISUAL RANGE SYSTEM,  
TRANSMISSOMETER SUPPORT CONCRETE BASE

[illegible]

0-5855-10